[0033] **FIG. 3** shows one example of a touch screen **300** that includes a plurality of parallel transparent conductive bars **330** disposed on a substrate **310**. Each bar **330** can be connected on a first end **370**A and a second end **370**B to lead lines **380**A and **380**B, respectively. The lead lines are configured so that each bar can be individually identified. The lead lines can be gathered together in a grouping **360** along an edge of the touch screen **300** that can be connected to an electronic tail (not shown) for electrically coupling the touch screen to controller electronics (not shown). Examples of such touch screens are disclosed in U.S. Pat. No.5,650,597, U.S. patent Publication 2003/0103043, and U.S. patent application Ser. Nos. 10/176564, 10/324728, and 10/201400, each of which is incorporated by reference into this document. Touch location can be determined in the y-direction by which bar exhibits the highest signal (and by interpolation methods if further positional refinement is desired), and in the x-direction by comparing the amount of current passing through each end of the bar. This type of touch screen is commercially available from 3M Touch Systems, Inc., under the trade designation Near Field Imaging.

[0034] **FIG. 4** shows another touch screen construction **400** of the present invention that includes a first substrate **410**, a first coating **420** substantially covering the substrate **410**, and a first series of parallel transparent conductive traces **430** disposed on the first coating **420**. Touch screen **400** also includes a second substrate **415** substantially covered by a second coating **425** and a second series of transparent conductive traces **435** disposed on the second coating **425** and oriented perpendicular to the first series of transparent conductive traces **430**. A filler material **440** is disposed between the first series of transparent conductive traces **430** and second series of transparent conductive traces **435** and contacting the first coating **420** and second coating **425** in areas uncovered by the transparent conductive traces. Filler material **440** is preferably an adhesive to bond the first substrate **410**, first coating **420**, and first pattern **430** to the second substrate **415**, second coating **425**, and second pattern **435**. The first coating **420** has a refractive index that is less that that of the first substrate **410** and the first series of transparent conductive traces **430**. Similarly, the second coating **425** has a refractive index that is less that of the first substrate **415** and the first series of transparent conductive traces **435**.

[0035] During operation, a conductive touch object can be capacitively coupled either through the first substrate **410** or the second substrate **415** with at least one of the first series of transparent conductive traces **430** and at least one of the second series of transparent conductive traces to determine both the x-and y-coordinates of the touch input. This type of touch screen can be referred to as a matrix-type touch screen. Examples of matrix-type touch screens are disclosed in U.S. Pat. Nos. 6,188,391; 5,844,506; and 5,386,219, as well as International Publications WO 01/27868, WO 02/100074, and WO 01/52416.

[0036] **FIG. 5** shows another example of a matrix-type touch screen according to the present invention. Touch screen construction **500** includes a substrate **510** having a first coating **520** substantially covering one surface and a second coating **525** substantially covering the opposing surface. A first series of transparent conductive traces **530** is disposed on the first coating **520** and a second series of transparent conductive traces **535** is disposed on the second coating **525** in an orientation orthogonal to the first series of transparent conductive traces. In this way, the same substrate **510** has coatings and transparent conductor patterns on both opposing surfaces. A filler material **540**, preferably an adhesive, is disposed over transparent conductive traces **530** in such a manner that the filler material covers the transparent conductive traces **530** and contacts the coating **520** in areas not covered by the transparent conductive traces **530**. An optional top substrate **550** can be disposed over the filler layer **540**, and can be bonded to the construction **500** using a separate adhesive layer or through the filler layer **540** if the filler material is itself an adhesive. An optional adhesive or other filler layer **545** can be disposed over transparent conductive traces **535**, and an optional bottom substrate **555** can be disposed over the optional filler layer **545**, if provided.

[0037] **FIG. 6** shows another touch screen according to the present invention. Touch screen **600** includes a touch screen construction **670** bonded to a support substrate **690** via an adhesive layer **680**. Touch screen construction **670** includes a first substrate **615** coated with a first coating **625**, a first transparent conductor pattern **635** disposed on first coating **625**, and a first filler material **645** disposed over first transparent conductor pattern **635** and filling the gaps between portions of pattern **635** to contact coating **625**. Touch screen construction **670** also includes a second substrate **610** coated with a second coating **620**, a second transparent conductor pattern **630** disposed on second coating **620**, and a second filler material **640** disposed over second transparent conductor pattern **630** and filling the gaps between portions of pattern **630** to contact coating **620**. Construction **670** also includes a top substrate **650** having a hardcoat layer **660** configured to provide a touch surface for the construction. Preferably, filler materials **640** and **645** are adhesive materials to bond together adjacent elements of the construction. Alternatively, separate adhesive layers (not shown) can be used.

[0038] Support substrate **690** can be any suitable substrate including rigid or flexible materials, for example glass or plastic. In exemplary embodiments, support substrate **690** is a rigid glass substrate, and substrates **610**, **615**, and **650** are flexible plastic substrates. In this way, subconstructions of construction **670** can be made on each of the flexible substrates **610**, **615**, and **650** using roll-to-roll or other suitable processing methods. Each of the subconstructions can then be laminated or otherwise adhered together to form construction **670**, which can in turn be bonded to a support substrate **690**.

[0039] **FIG. 7** schematically shows a touch screen system **700** that includes a touch screen **710** according to the present invention disposed proximate a display element **720** so that display element **720** can be viewed through touch screen **710**. The touch screen **710** can be used as an input device to interact with information shown on the display element **720**. Display element **720** can be an electronic display capable of changeably displaying information such as text or graphics. Display element **720** could also include static information such as printed graphics, text, or other indicia. Display element **720** can combine an electronic display with static graphics, for example in the form of icons on a display screen that may be printed or otherwise disposed directly on the display screen or provided on a separate sheet that can